

# **Modeling the transfer of line edge roughness from an EUV mask to the wafer**

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Contributions to line edge roughness (LER) from extreme ultraviolet (EUV) masks have recently been shown to be an issue of concern for both the accuracy of current resist evaluation tests as well the ultimate LER requirements for the 22 nm production node. More recently, it has been shown that the power spectral density of the mask-induced roughness is markedly different than that of intrinsic resist roughness and thus potentially serves as a mechanism for distinguishing mask effects from resist effects in experimental results. But the evaluation of stochastic effects in the resist itself demonstrate that such a test would only be viable in cases where the resist effects are completely negligible in terms of their contribution to the total LER compared to the mask effects. Also the results presented here lead us to the surprising conclusion that it is indeed possible for mask contributors to be the dominant source of LER while the spatial characteristics of the LER remain indistinguishable from the fractal characteristics of resist-induced LER.

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